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ABSTRACT

Two hundred-sixteen fifth- and sixth-graders were dichotomized on attitude toward school (positive or negative) and randomly assigned to three conditions in which they were instructed that they were about to take either an Intelligence, Achievement, or a Routine test. Results of analysis of variance on Kuhlmann-Anderson scores revealed significant effects attributable to instructions and attitude. (Author)

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The Effect of Test Instructions and Attitude Toward School on Scores on An Intelligence Test

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Running head: The Effect of Test Instructions

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The Effect of Test Instructions and Attitudes Toward School on Scores on An Intelligence Test

In an initial investigation Yamamoto and Dizney (1965) reasoned that because "high IQ" is given a premium by society, and is therefore more socially desirable, children may be expected to attain higher scores when instructed that they are taking a test of "intelligence" rather than a "routine" or "achievement" test. While results of the Yamamoto and Dizney investigation confirmed these expectations, findings of later replication studies (Bauer, 1975; Berglund, 1970; English and Fulton, 1972; Yamamoto and Davis, 1966) were equivocal.

Failure to find consistent results with respect to the effect of test instructions may be attributed to a number of sources of variation in test scores not accounted for in earlier investigations. More precisely, despite the fact that behavior of subjects under more or less socially desirable instructional sets may be expected to be influenced by the character of their attitudes. the effect of variation in instructions in relation to differences in children's attitude toward school was not examined.

The purpose of this study was to investigate the effect of test instructions on scores obtained by children expressing positive and negative attitudes toward school. The investigators hypothesized

that test scores of children with positive and negative attitudes are affected differentially by routine, achievement and intelligence instructions.

Method

Subjects

The sample consisted of 216 fifth- and sixth-grade children (103 girls; 113 boys) who were attending eight classrooms in an elementary school situated in a small rural town in northern California. Inspection of occupations held by heads of household indicated that children from a range of socioeconomic backgrounds were represented in the sample.

Instruments

The Kuhlmann-Anderson Test, Seventh Edition. The Kuhlmann-Anderson Test was chosen as the criterion instrument. The Kuhlmann-Anderson does not carry the word "intelligence" in the title, and no mention is made in preliminary instructions of intelligence or IQ. The content of the test could be described as well by "a measure of intelligence" as by "a measure of achievement." Results of testing were expressed as deviation IQ's with a mean of 100 and a standard deviation of 16. Test-retest reliabilities of the Kuhlmann-Anderson were reported as ranging between .83 and .92 which are satisfactory for use as a dependent measure.

Attitude Toward School Instrument. Attitude toward school was assessed by means of a modified Thurstone-type instrument constructed from short essays written by fifth grade children who were attending

a separate elementary school. Specifically, from a sample of 25 student essays, seven positive statements and seven negative statements about school were derived. In the present study these statements were presented in written form to subjects who responded by checking those statements which best described their feelings about school.

Subsequently, for each subject the relative strength of his positive compared to his negative attitude toward school was assessed by computing the ratio of the number of positive to the number of negative statements checked on the inventory. Subjects who manifested positive/negative ratios greater than one were identified as those with positive attitude, and subjects responding with positive/negative ratios less than one were considered negative in attitude toward school. In those cases (about 6 per cent) showing positive/negative ratios equal to one judgment concerning the relative strength of positive or negative attitude was made on the basis of the content of responses given by subjects to a sentence completion item which read as follows, "School is. . . ."

Comparison of proportions of fifth and sixth grade children classified positive and negative in attitude with analogous proportions in other investigations (Jackson, 1968; Tenenbaum, 1940) suggested that the present assessment technique resulted in identification of valid positive and negative attitude groups.

Testing Procedures

Prior to administration of the instruments, subjects were assigned at random to one of three instruction conditions for group

testing purposes. Subsequently, children responded first to the attitude instrument and then to the Kuhlmann-Anderson. Adherence to standard testing procedures was strictly maintained except for the following deviations in Kuhlmann-Anderson instructions.

Instructions

The first paragraph of the preliminary instructions to students of the Kuhlmann-Anderson was replaced by one of the following three paragraphs. In addition subjects were reminded of the nature of their test (intelligence, routine, or achievement) at the end of the preliminary instructions and again at the conclusion of the fourth subtest. Except for these three places, no alteration was made in the original instructions.

Achievement instructions (AI). "The test you are going to take today is a test of achievement and a very good one, too. As you know, a test of achievement will tell us how well you have learned your lessons, how much you know about many things, and how skillfully you can use what you know. Your achievement also tells us how much you have learned compared to other students like yourself. A good hard-working student makes a high score on this test. Listen carefully to the directions I am going to give you and do your best to get a high achievement score, O.K.?"

Intelligence instructions (II). "The test you are going to take today is a test of intelligence and a very good one, too. As you know, a test of intelligence will give us your IQ which tells us how smart you are, how clever you are, and how capable you are.

Your IQ also tells us how bright you are compared to other students like yourself. A high IQ is necessary to make good grades in school, to learn things quickly and well, to go to college, and to hold a good job. A bright, able student makes a high score on this test. Listen carefully to the directions I am going to give you and do your best to get a high IQ, O.K.?"

Routine Instructions (RI). "This is just a routine testing on how well you understand words, their meanings and uses, and how well you can answer questions and do work with numbers and figures. Listen carefully to the directions I am going to give you and do your best to get a high score, O.K.?"

Design and Analysis

The study was conceptualized as a random factorial analysis of variance. Since results of initial analyses of variance conducted on Kuhlmann-Anderson scores revealed that grade did not enter as a significant factor, a 2 x 2 x 3 (attitude toward school x sex x test instructions) unweighted mean analysis of variance collapsed on grade was carried out. Following analysis of variance, t tests using the unbiased estimate of error from the analysis of variance, were conducted for individual comparisons among mean pairs (Lindquist, 1953).

Results

Table 1 shows mean Kuhlmann-Anderson scores obtained by boys and girls with positive and negative attitude toward school under routine, achievement and intelligence instructions.

Insert Table 1 About Here

Unweighted means analysis of variance (Table 2) uncovered an effect attributable to instructions significant at the .05 level of confidence.

Insert Table 2 About Here

Paired comparison tests conducted on instruction group means in Table 1 indicated that mean scores of children in routine (t = 2.75, df=204, $p < .01$) and intelligence (t = 1.97, df=204, $p < .05$) instruction groups were significantly lower than the mean of children in the achievement group. Mean score of routine instruction group contrasted with intelligence group was not statistically significant (t = .77, df=204, $p > .05$) at the five per cent level.

Analysis of variance revealed also an effect due to attitude toward school significant at the one per cent level. Mean Kuhlmann-Anderson score obtained by children with positive attitude was 104.23, and the mean of children with negative attitude was 94.02.

Results of ANOVA offered some support for the hypothesis of this study that children with positive and negative attitudes are affected differentially by variation in instructions. Specifically, Table 2 shows that the probability of obtaining the instruction by attitude interaction was less than one in ten. Means of children with positive and negative attitude under the three instructional

sets are reported in Table 1 and displayed graphically in Figure 1. Paired comparisons of attitude group means under each instruction

Insert Figure 1 About Here

condition revealed that children with positive attitude scored significantly higher than those with negative attitude under routine (t = 4.43, df=204, $p < .01$) and achievement (t = 2.46, df=204, $p < .01$) but not under intelligence (t = 1.23, df=204, $p < .05$) instructions. Contrasts of instruction group means for each attitude group showed that the negative attitude group scored lower under routine than under achievement (t = 2.40, df=204, $p < .01$) and intelligence (t = 2.38, df=204, $p < .05$) instructions, while the positive attitude group scored higher under achievement than under intelligence (t = 2.10, df=204, $p < .05$) or routine (t = 1.86, df=204, $p < .10$) instructions.

Discussion

Results of this study along with those reported by Yamamoto and Dizney (1965) and Bauer (1975) supported the conclusion that scores from group administered tests vary depending on the instructions given concerning the purpose of the test. The study showed also that differences in children's attitudes toward school affect scores obtained on academic tests. An alternative explanation for these results, however, is that children who perform less well on academic tasks develop negative attitudes toward school. Indeed, both

explanation likely describe events occurring in school classrooms.

In regard to the original hypothesis, the investigation provided some evidence that children with negative attitude toward school score higher when instructed that a test assesses socially desirable qualities such as "intelligence" and "achievement" than when a test is introduced as a routine academic task. On the other hand, children with positive attitude appear to score highest when a test is introduced as an "achievement" rather than a routine or intelligence test.

Clearly, future investigations need to focus on the possible effect of motive to avoid failure rather strive for success, on scores obtained by children with positive attitude toward school under varied instructions.

Implications

Within the context of the effect on student's lives had by decisions made on the basis of test scores, implications are that teachers, counselors, school psychologists and school administrators need to be cautious in interpretation of scores obtained from group administered tests of intelligence and that test publishers need to consider standardization of instructions regarding the purpose of such test. Moreover, since scores attained by children with negative attitude toward school were generally lower than scores of children with positive attitude and seemed to be highly susceptible

to variation in instructions, another implication is that schools need to recognize the importance of fostering the development of positive attitude among all children.

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Table 1

Mean Kuhlmann-Anderson Scores of Boys and Girls with Positive and Negative Attitudes Toward School Under Routine, Achievement and Intelligence Instructions

		Instructions					
Attitude	Sex	Routine	n	Achievement	n	Intelligence	n
Positive	Boys	103.14	29	106.44	27	100.38	24
	Girls	102.80	30	107.74	34	103.87	31
	Total Positive	102.97		107.16		102.35	
Negative	Boys	86.70	10	97.18	11	96.83	12
	Girls	86.75	4	101.50	2	103.50	2
	Total Negative	86.71		97.85		97.79	
	Total Instructions	99.85	73	105.53	74	101.42	69

Table 2

Analysis of Variance

(Instructions x Sex x Attitude Toward School)

Source	df	MS	F	p
Instructions (I)	2	526.34	3.42	<.05
Attitude (A)	1	1554.72	10.09	<.01
Sex (S)	1	138.39	< 1	N. S.
I X A	2	357.71	2.32	<.10
I X S	2	47.54	< 1	N. S.
A X S	1	25.04	< 1	N. S.
I X A X S	2	4.25	< 1	N. S.
Error	204	154.03		

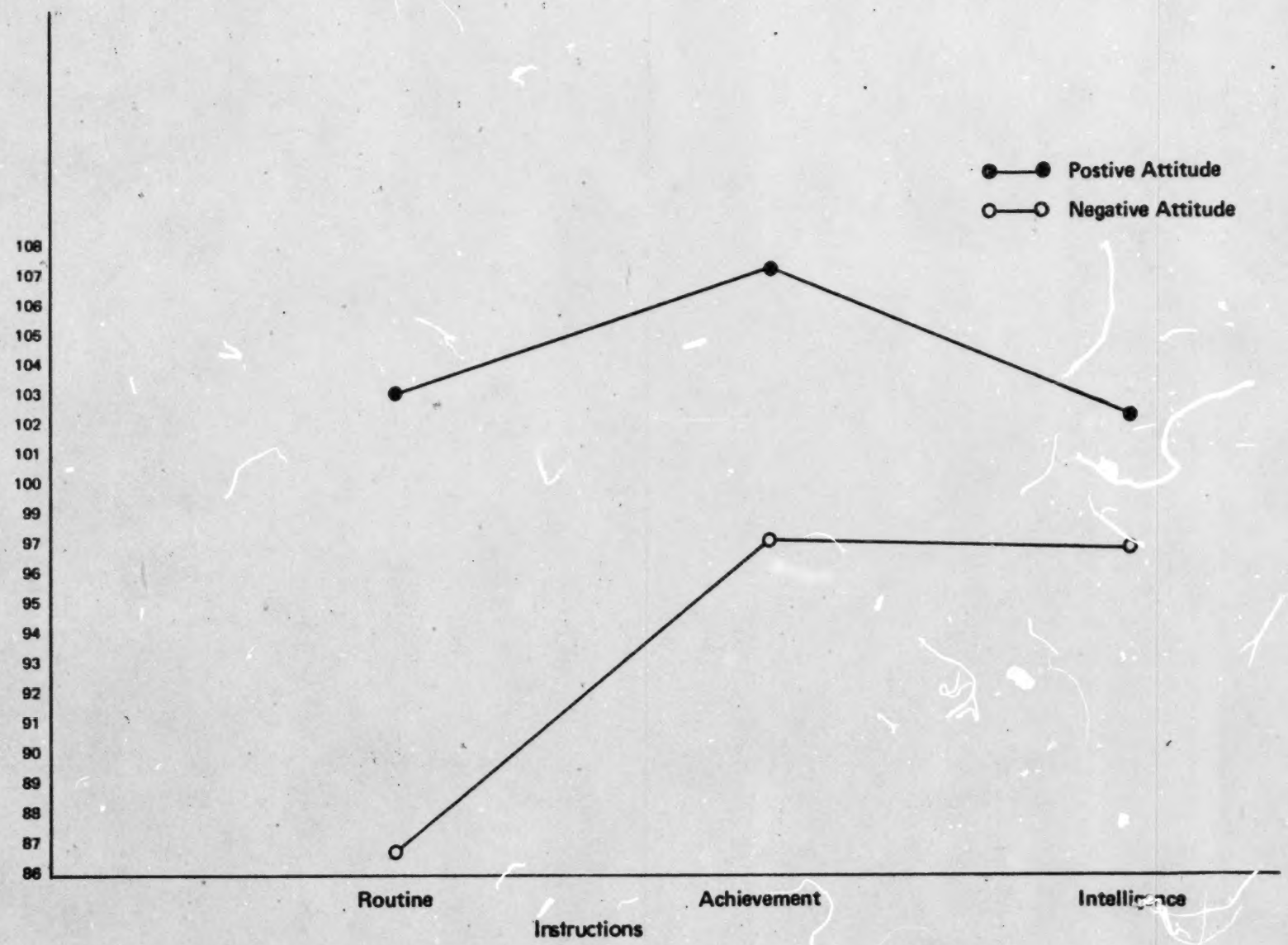

Figure 1. Graphic representation of Instruction and attitude interaction